

Near Real-Time Applications of Earth Remote Sensing for Response to Meteorological Disasters

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ABSTRACT

Numerous on-orbit satellites provide a wide range of spatial, spectral, and temporal resolutions supporting the use of their resulting imagery in assessments of disasters that are meteorological in nature. This presentation will provide an overview of recent use of Earth remote sensing by NASA's Short-term Prediction Research and Transition (SPoRT) Center in response to disaster activities in 2012 and 2013, along with case studies supporting ongoing research and development. The SPoRT Center, with support from NASA's Applied Sciences Program, has explored a variety of new applications of Earth-observing sensors to support disaster response. In May 2013, the SPoRT Center developed unique power outage composites representing the first clear sky view of damage inflicted upon Moore and Oklahoma City, Oklahoma following the devastating EF-5 tornado that occurred on May 20. Subsequent ASTER, MODIS, Landsat-7 and Landsat-8 imagery help to identify the damaged area. Higher resolution imagery of Moore, Oklahoma were provided by commercial satellites and the recently available International Space Station (ISS) SERVIR Environmental Research and Visualization System (ISERV) instrument. New techniques are being explored by the SPoRT team in order to better identify damage visible in high resolution imagery, and to monitor ongoing recovery for Moore, Oklahoma. Other applications are being developed to refine light source detections with the VIIRS day-night band and to map hail during the growing season through combination of available satellite and radar imagery. The aforementioned products and support are not useful unless they are distributed in a timely manner and within an appropriate decision support system. This presentation will provide an update on ongoing activities to support inclusion of these data sets within the NOAA National Weather Service Damage Assessment Toolkit, which allows meteorologists in the field to consult available satellite imagery while performing their damage assessment.